

Listed Waterbody: **Aptos Creek and
Valencia Creek**



Listed Condition: **Pathogens**

Designated Beneficial Uses:

Aptos Creek: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Ground Water Recharge (GWR), Contact and Non-contact Recreation (REC-1 and REC-2), Wildlife Habitat (WILD), Cold Freshwater Habitat (COLD), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Preservation of Biological Habitats of Special Significance (BIOL), Estuarine Habitat (EST), Freshwater Replacement (FRSH), and Commercial and Sport Fishing (COMM)

Valencia Creek: Municipal and Domestic Supply (MUN), Ground Water Recharge (GWR), Contact and Non-contact Recreation (REC-1 and REC-2), Wildlife Habitat (WILD), Cold Freshwater Habitat (COLD), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), and Commercial and Sport Fishing (COMM)

Watershed Location: Eastern portion of Santa Cruz County, drains directly to ocean

Year added to California's CWA Section 303(d) List of Impaired Waters - 1994

Preliminary Schedule for Aptos Creek – Pathogen Impairment Investigation project

Task	Completion Date	Notes
Phase 2: Project Plan	December 2003	Active
Phase 3: Data Collection and Analysis: Revised Problem Statement	October 2005	*contact staff to submit data
Phase 4: Preliminary Project Report: Numeric Targets and Source Analysis	February 2006	
Phase 5: Project Report	November 2006	
Phase 6: Regulatory Action (if needed)	April 2007	

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Problem Background:

The water contact recreation beneficial use requires the most stringent water quality objective. The *Water Quality Control Plan, Central Coast Region* (Basin Plan) contains the following bacteria objective for waters with contact water recreation (REC-1):

“Fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400/100 ml.”

Often, available datasets do not contain five samples in a 30-day period, so the portion of the objective that is evaluated is that “no more than ten percent of total samples during

any 30-day period exceed 400 /100 mL.” One can note that, in instance where fewer than five samples were collected in 30 days, the “ten percent” threshold is exceeded if any one sample exceeds 400 / 100 mL.

Basis for Listing Aptos Creek: Aptos Creek was listed in 1994 based upon Santa Cruz County Environmental Health data. The figure below shows Aptos Creek data at the river mouth. This data indicates the water quality objective is often violated. Violations occur in all seasons.

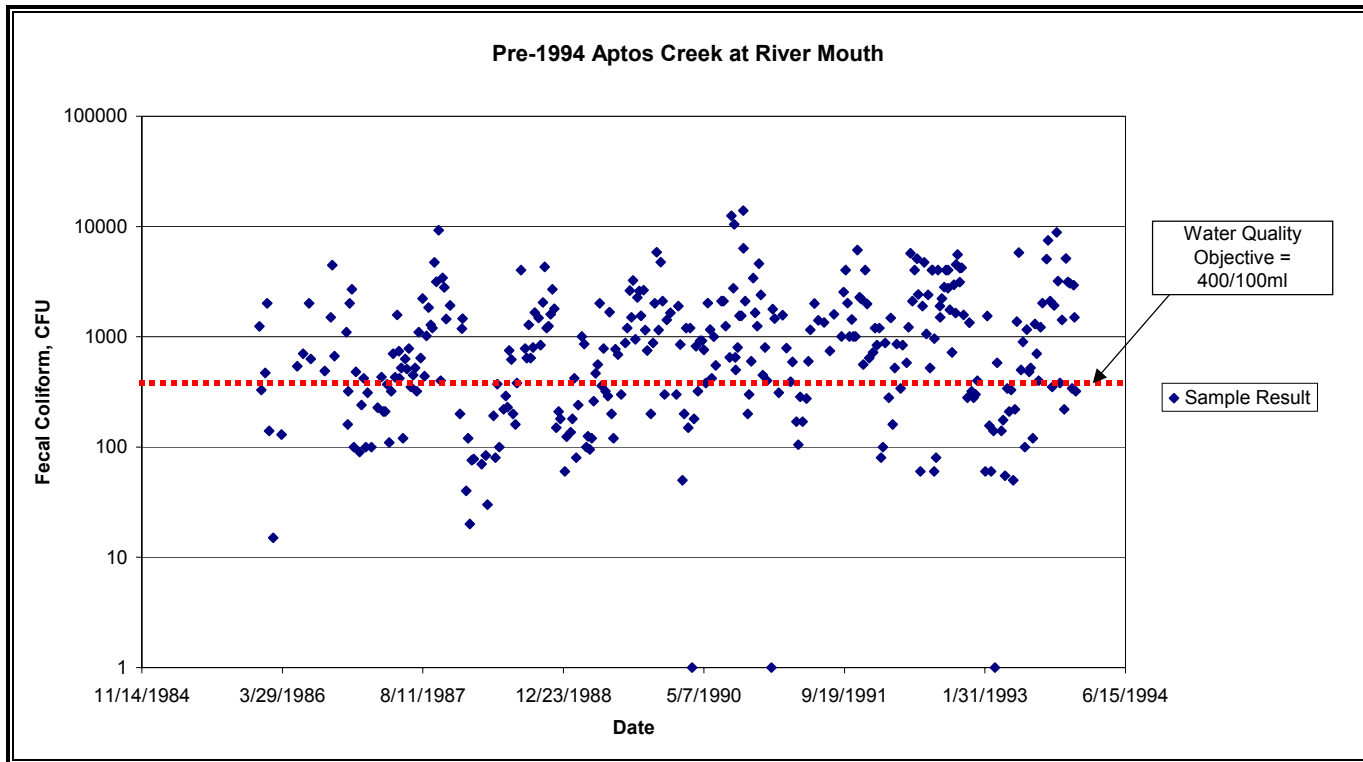


Figure 1. Pre-1994 Aptos Creek at River Mouth

Figure Two below shows water quality data just upstream of the confluence with Valencia Creek. Water quality objectives are occasionally violated. Violations occur in all seasons.

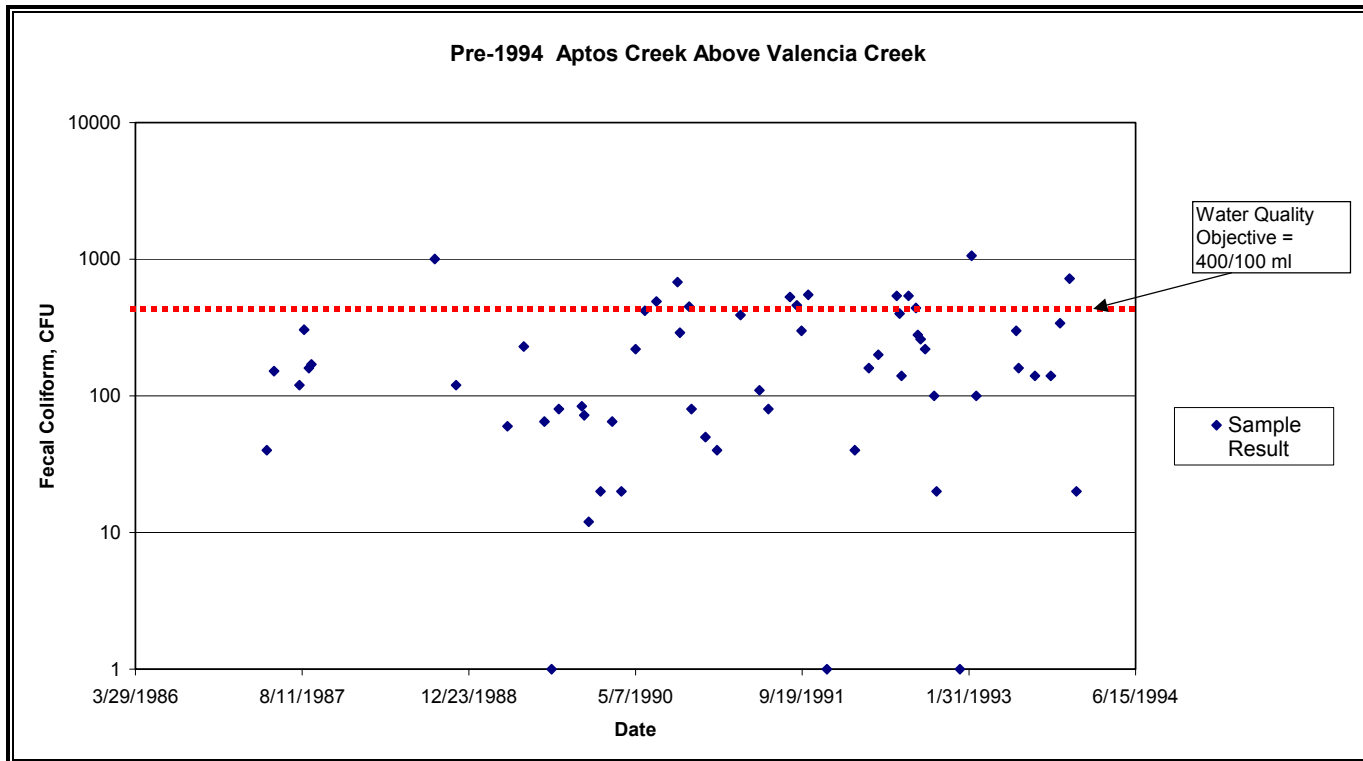


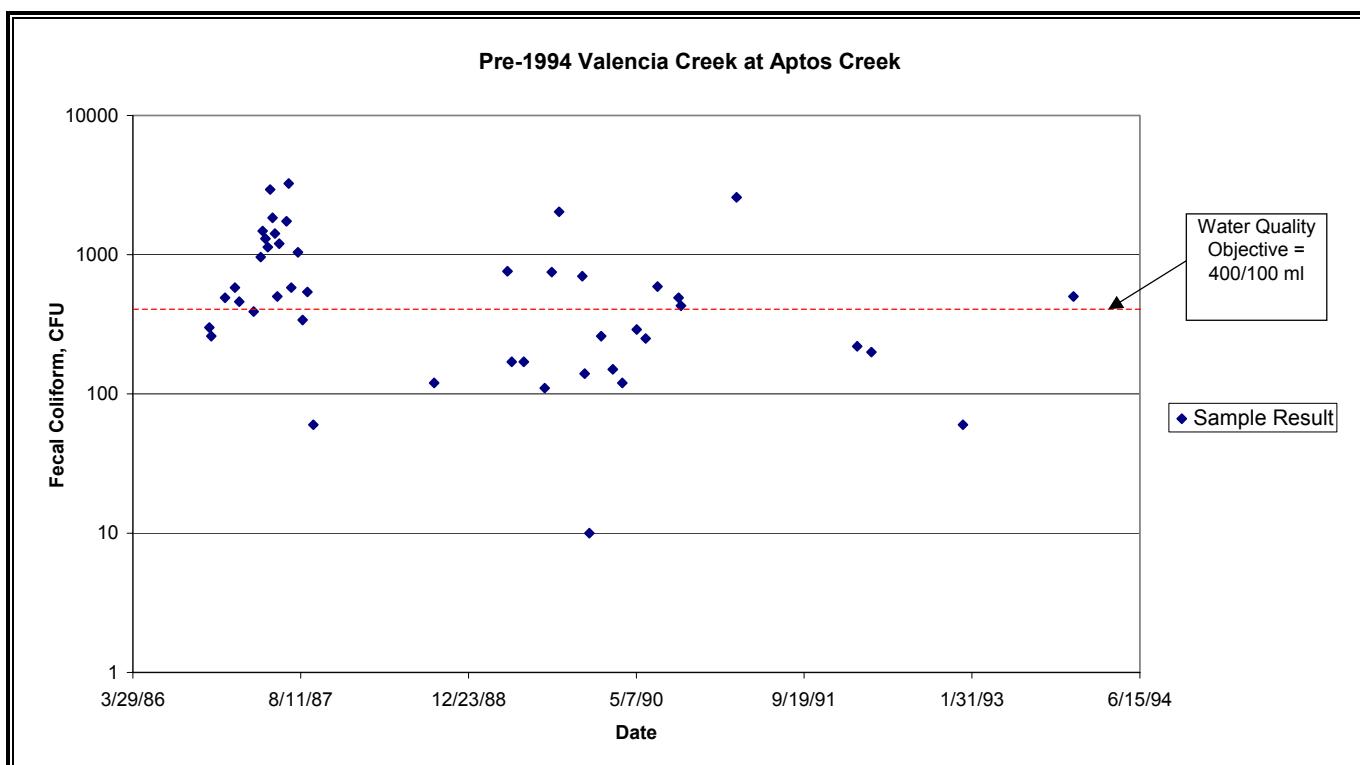
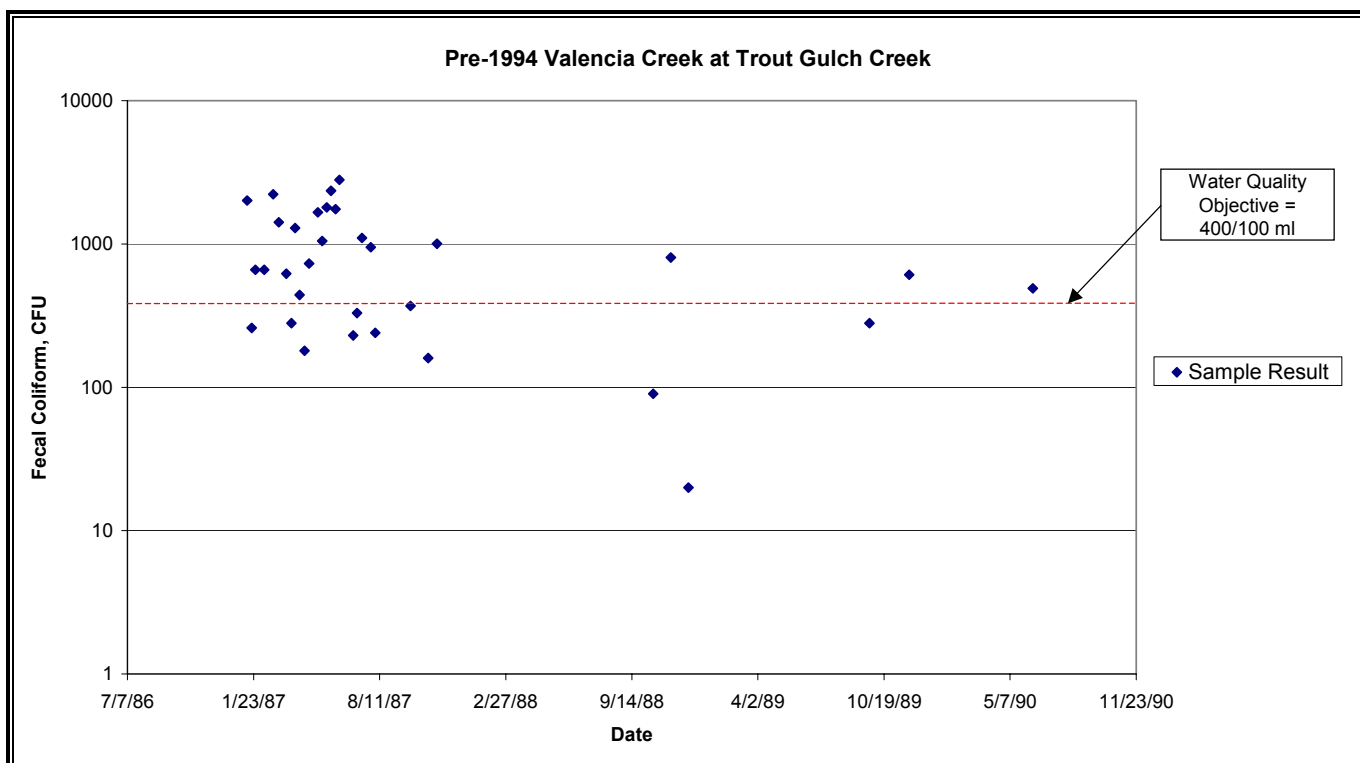
Figure 2. Pre-1994 Aptos Creek Above Valencia Creek

Basis for Listing Valencia Creek:

The basis for listing is Santa Cruz County data. Valencia Creek was listed as impaired in 1994. Valencia Creek is sampled by Santa Cruz County at two locations. One site is just upstream of the confluence with Aptos Creek. The other site is Valencia Creek at Trout Gulch Creek. The water contact recreation (REC-1) beneficial use requires the most stringent water quality objective as contained in the Basin Plan:

“Fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400/100 ml.”

The Figures below show the data that led to the listing.

**Figure 3. Pre-1994 Valencia Creek at Aptos Creek****Figure 4. Pre-1994 Valencia Creek at Trout Gulch Creek**

Current Information for Aptos Creek:

Staff collected recent sampling data from Santa Cruz County. The Figure below indicates Aptos Creek site is impaired for pathogens at the river mouth. Violations occur during all seasons.

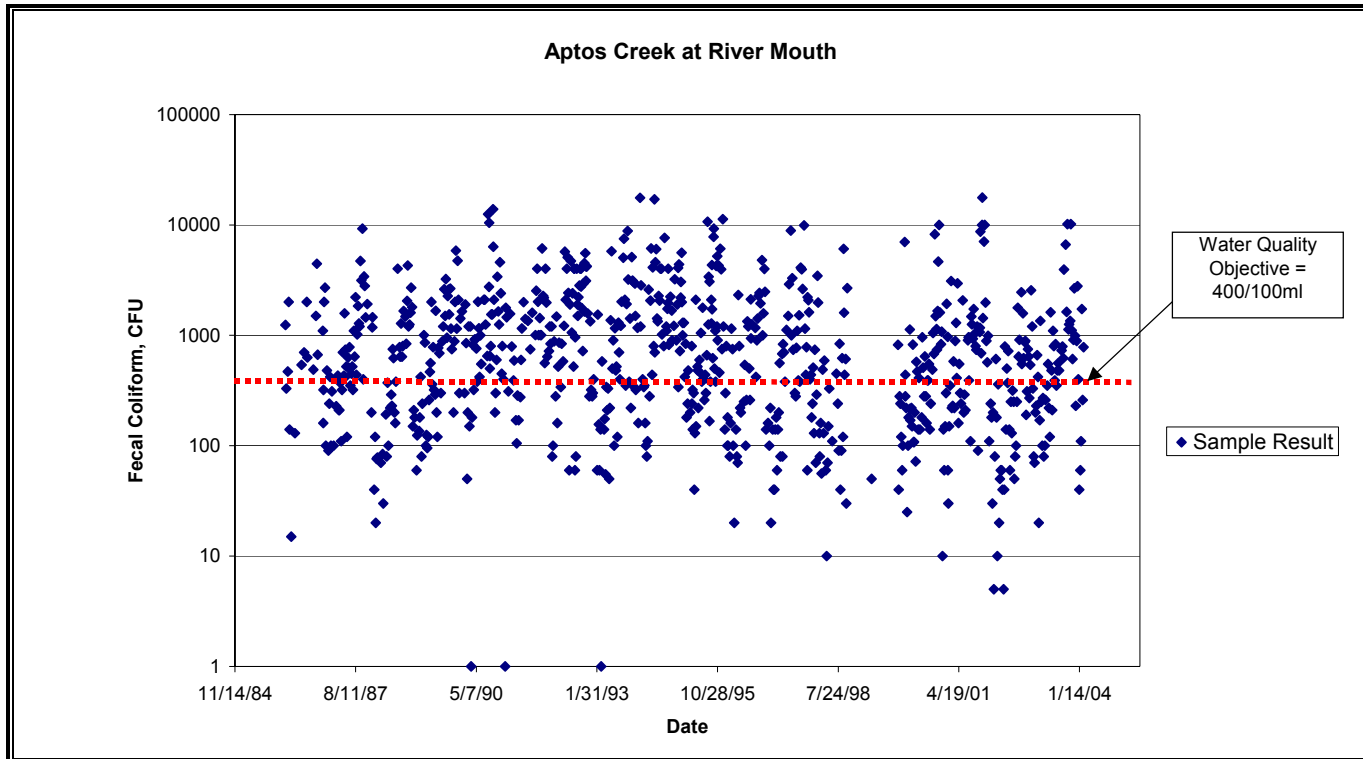


Figure 5. Aptos Creek at River Mouth

Staff considers Aptos Creek to be impaired between the river mouth station and Valencia Creek. Valencia Creek is also on the 303(d) List. Just upstream of Valencia Creek, Aptos Creek appears to have improved in water quality during recent years as shown below.

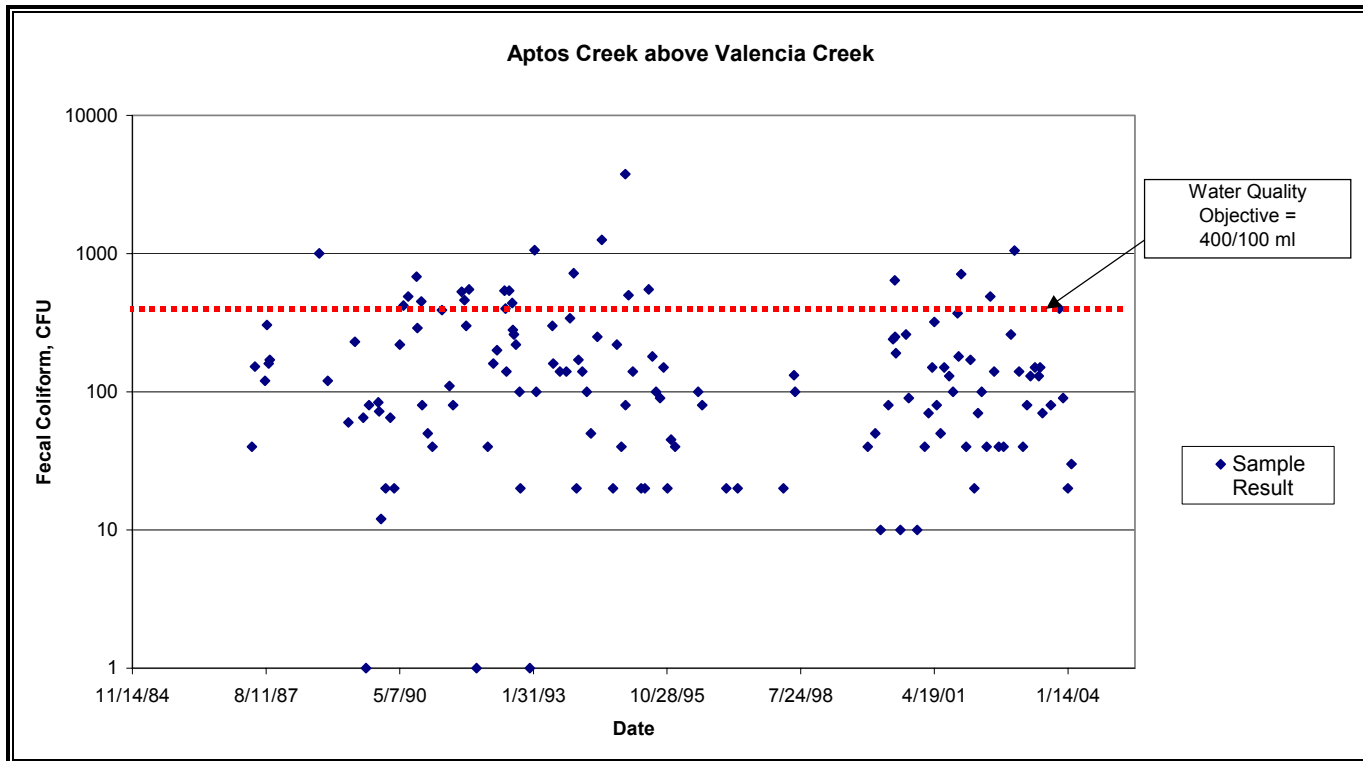
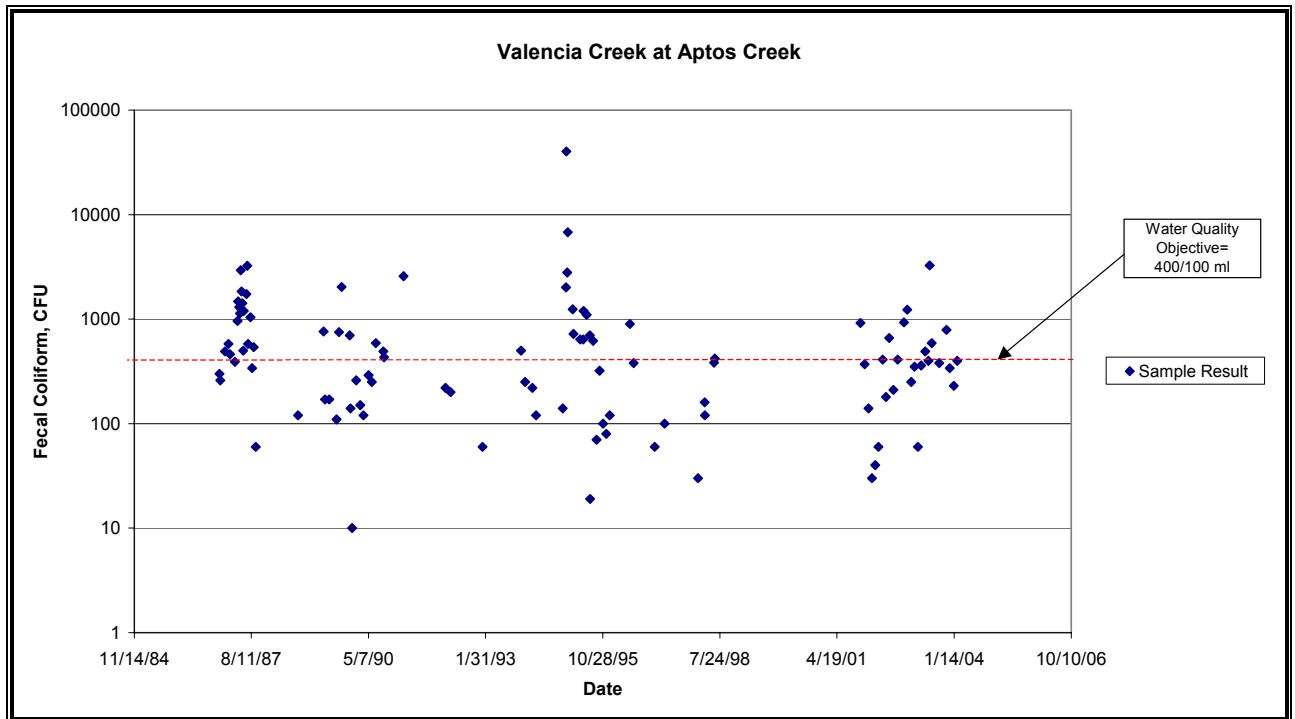


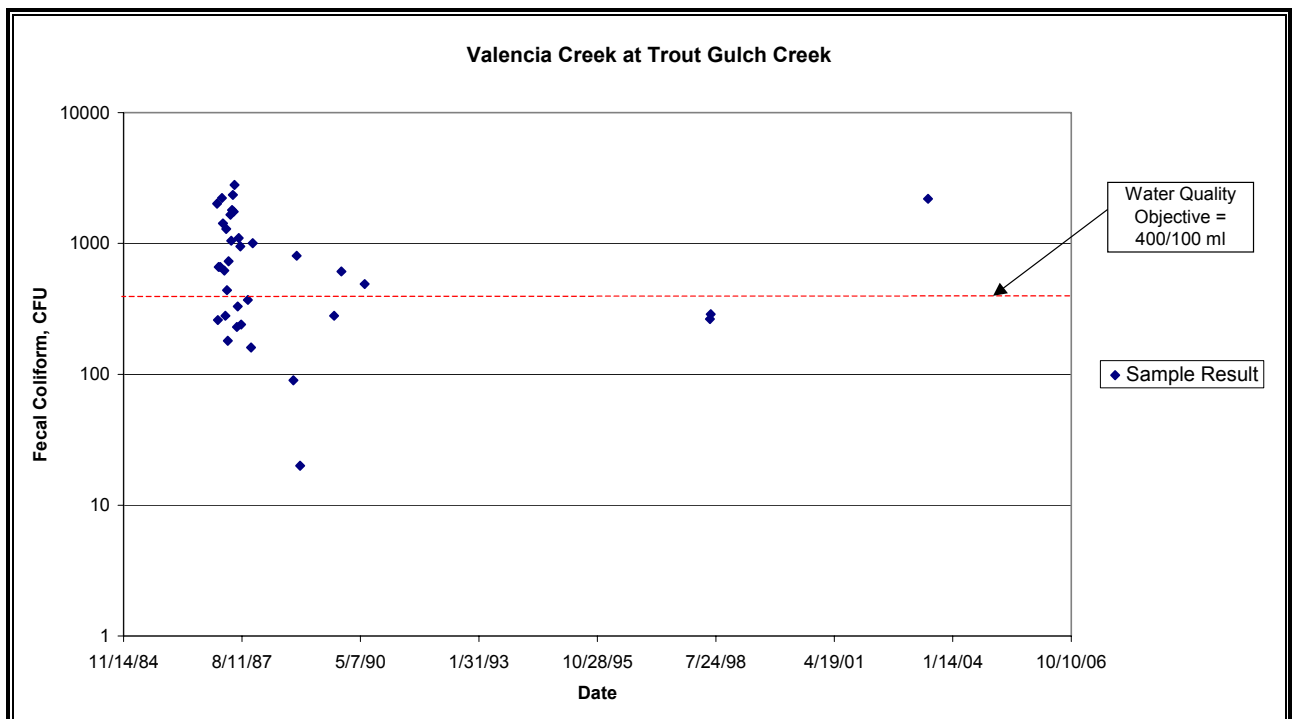
Figure 6. Aptos Creek above Valencia Creek

Current Information for Valencia Creek:

Staff collected recent sampling data from Santa Cruz County. The Figure below indicates the Valencia Creek at Aptos Creek site is still impaired for pathogens.

**Figure 7. Valencia Creek at Aptos Creek**

Santa Cruz County samples Valencia Creek at Trout Gulch Creek only occasionally. Very little recent information is available for this station as shown below.

**Figure 8. Valencia Creek at Trout Gulch Creek**

What Next for Aptos Creek:

At this time, we do not consider the “Aptos Creek upstream of Valencia Creek” station to be impaired. However, this station should continue to be monitored on a regular basis to verify the condition at this site.

Therefore, the TMDL for Aptos Creek will address Aptos Creek from the river mouth to Valencia Creek. In the event the “Aptos Creek upstream of Valencia Creek” station becomes impaired, the TMDL for Aptos Creek will be amended to include the upper portion of Aptos Creek.

What are the bacteria sources to Aptos Creek? Recent studies of Aptos Creek lagoon showed high levels of nitrate and bacteria, strongly suggesting a sewage source near the mouth.¹ Storm drains draining the Rio del Mar flats are the suspected means of transmission and limited sampling has shown high levels of bacteria in the drains. There are also large populations of birds in the lagoon. Bacteria levels in Aptos Creek are considerably lower just upstream of Spreckles Drive, but elevated levels in Valencia creek suggests a significant upstream bacterial source from septic systems, wildlife, and/or domestic animals.

Regional Board staff will manage the County of Santa Cruz Proposition 13 contract, “Identification and Characterization of Non-Point Sources of Pollution Affecting Santa Cruz County Beaches” which will provide the necessary data to identify sources and may provide the necessary data to perform corrective action. The goal of this project is to reduce the potential for area beaches closure due to bacteria from human sources and to determine the extent to which contamination may result from leakage from sanitary sewers. Regional Board staff assume this project will provide the necessary information to develop a source analysis, allocate loads, and design an implementation plan to achieve load allocations. In the event this project does not provide all the information a TMDL requires, additional Regional Board investigation may be necessary.

What Next for Valencia Creek:

It is evident that elevated levels of fecal coliform exist in the lowest reach of Valencia Creek (at the Aptos Creek confluence). Levels of fecal coliform were above the standard (fecal coliform Basin Plan standard for REC-1). The question for this listing is, what are the current levels and potential sources of fecal coliform in Valencia Creek upstream of the Valencia Creek at Aptos Creek station?

The suspected sources are septic systems, wildlife, and/or domestic animals.

Additional monitoring information is required to:

- 1) Determine locations where fecal coliform levels currently exceed water quality objectives; and,
- 2) Determine the source of fecal coliform via source tracking (DNA ribotyping analysis).

Regional Board staff believe more water quality data is necessary to determine where and to what extent water quality is impaired. It is not known how far upstream from the confluence with Aptos Creek this impairment exists nor to what extent various sources contribute to any impairment.

¹ Swanson Hydrology and Geomorphology, *Aptos Creek Watershed Assessment and Enhancement Plan, Hydrologic and Water Quality Analysis for Coastal Watershed Council*, Internal Draft, December 19, 2002,

Therefore, staff will require the County of Santa Cruz to participate in further defining the extent and sources of pathogens. DNA analysis may also be useful to further determine sources.

Project Plan: Below is a brief overview of the project steps that can currently be projected.

Phase 3. Data Collection and Analysis: Revised Problem Statement

Who	<p>Regional Board (RB) staff – project lead scientist (A. Carpenter)</p> <p><u>Aptos Creek</u> Stakeholders: No additional stakeholder involvement beyond existing contract requirements is expected (review Proposition 13 contract reports & interact).</p> <p><u>Valencia Creek:</u> Stakeholders- Review Monitoring Plan and Data Collection Report to provide technical assistance</p>
Action Steps & Schedule	<ul style="list-style-type: none"> January 2004-February 2004--Contact County to determine if County has water quality data for Upper Aptos Creek and Valencia Creek. Obtain data and determine compliance with Basin Plan. March 2004 - April 2004-- Receive additional Santa Cruz County data and manage data, manage data, analyze, and review data; identify data gaps <p><u>Aptos Creek:</u> The tasks below are associated with the County of Santa Cruz Proposition 13 contract, “Identification and Characterization of Non-Point Sources of Pollution Affecting Santa Cruz County Beaches.” A product of this contract is a report that includes “best management practices or management measures implemented as part of the project in evaluating, preventing or reducing nonpoint source pollution.” The contract does not <i>require</i> (emphasis added) the County to implement any best management practices or management measures.</p> <ul style="list-style-type: none"> January 2004-March 2005--Participate in Prop 13 Grant TAC meetings and review quarterly reports September 2004--Review maps, videos, and findings of sewer pipe evaluations October 2004--Review Prop 13 Analytical Results Report November 2004--Review Health Risk Study Results January 2005--Review Draft Final Report March 2005--Review Final Prop 13 Grant Project Report <ul style="list-style-type: none"> April 2005--Develop Data Collection and Analysis Report and Revised Problem Statement. This report will present data collected for the Prop 13 Grant, data from the last five years of Regional Board/County files, and CCAMP data. This report will document water quality conditions. <p><u>Valencia Creek:</u></p> <ul style="list-style-type: none"> July-August 2004-- Develop and require Monitoring Plan of County to characterize are problem area and sources September 2004-August 2005: Oversee implementation of Monitoring Plan and submittal of results. The RB will require the County to perform the Monitoring Plan. September 2005-October 2005--Develop Data Collection and Analysis Report and Revised Problem Statement. This report will present data collected from the last five years of Regional Board/County files. This report will document water

	quality conditions and determine whether DNA Analysis is necessary to identify sources.
Cost (PY & \$)	<p><u>Staff Resources:</u> for FY 04-05: 0.2 PY and for FY 05-06: 0.2 PY</p> <p><u>Contract Resources:</u> = \$173,560 already established for the Proposition 13 contract. No additional contract resources are needed at this time.</p> <p><u>Other:</u> None</p>
Issues	<p><u>Aptos Creek:</u></p> <p>1. This project will focus on the lower Aptos Creek because the upper Aptos Creek does not appear to be impaired. The upper Aptos Creek should continue to be monitored on a regular basis to verify the impairment condition at this site. In the event the upper Aptos Creek becomes impaired, the TMDL for Aptos Creek will be amended to include the upper portion of Aptos Creek.</p> <p>2. RB staff will manage the County of Santa Cruz Proposition 13 contract, "Identification and Characterization of Non-Point Sources of Pollution Affecting Santa Cruz County Beaches" which will provide the necessary data to identify sources and may provide the necessary data to perform corrective action. The goal of this project is to reduce the potential for area beaches closure due to bacteria from human sources and to determine the extent to which contamination may result from leakage from sanitary sewers. RB3 staff assume this project will provide the necessary information to develop a source analysis, allocate loads, and design an implementation plan to achieve load allocations. In the event this project does not provide all the information a TMDL requires, additional Regional Board investigation may be necessary.</p> <p><u>Valencia Creek</u></p> <p>Staff does not know exactly when the County of Santa Cruz will be able to perform the additional necessary sampling. Factors such as budget and staff availability may alter the time when the sampling will be performed.</p>

Phase 4. Preliminary Project Report: Numeric Targets and Source Analysis

Who	<p>Regional Board staff – project lead scientist (A. Carpenter)</p> <p><u>Aptos Creek:</u> Stakeholders: No additional stakeholder involvement beyond existing contract requirements is expected (review Proposition 13 contract reports & interact).</p> <p><u>Valencia Creek:</u> <u>Stakeholders:</u> Provide Technical Advice</p>
Action Steps & Schedule	<p><u>Aptos Creek:</u></p> <ul style="list-style-type: none"> October 2004-- Selection of Numeric Targets: RB staff will utilize Basin Plan Bacteria Objectives as the numeric target. Staff will complete a preliminary report describing the target. Coordinate with Basin Planning Staff for possible bacteria objective revision to Basin Plan. RB Basin Planning staff indicate they hope to have a new pathogen objective adopted by the Regional Board by summer or fall of 2004. May 2005-July 2005-- Perform source analysis relating locations of target exceedences to determine probable pathogen sources causing exceedences; complete Source Analysis including GIS analysis to determine land uses in watershed based on DNA results provided by the Proposition 13 Grant. August -September 2005-- Summarize Numeric Targets and describe Source Analysis in written Progress Report <p><u>Valencia Creek:</u></p> <ul style="list-style-type: none"> October 2004-- Selection of Numeric Targets: RB staff will utilize Basin Plan Bacteria Objectives as the numeric target. Staff will complete a preliminary report describing the target. Coordinate with Basin Planning Staff for possible bacteria objective revision to Basin Plan. RB Basin Planning staff indicate they hope to have a new pathogen objective adopted by the Regional Board by summer or fall of 2004. November 2005-December 2005-- Perform source analysis relating locations of target exceedences to determine probable pathogen sources causing exceedences; complete Source Analysis including GIS analysis to determine land uses in watershed. January 2006-February 2006-- Summarize Numeric Targets and describe Source Analysis in written Report.
Cost (PY & \$)	<p><u>Staff Resources:</u> 0.1 PY for FY 04-05 and 0.3 PY for FY 05-06</p> <p><u>Contract Resources:</u> no RB3 contract money needed; DNA analysis is furnished by the Prop 13 Grant.</p>
Issues	<p><u>Aptos Creek:</u></p> <p>RB staff will manage the County of Santa Cruz Proposition 13 contract, "Identification and Characterization of Non-Point Sources of Pollution Affecting Santa Cruz County Beaches" which will provide the necessary data to identify sources and should provide the necessary data to perform corrective action. The</p>

	<p>goal of this project is to reduce the potential for area beaches closure due to bacteria from human sources and to determine the extent to which contamination may result from leakage from sanitary sewers. RB3 staff assume this project will provide the necessary information for the TMDL. In the event this project does not provide all the information a TMDL requires, additional Regional Board investigation may be necessary.</p> <p><u>Valencia Creek:</u></p> <p>Source analysis performance may be delayed if County is not able to attain the Monitoring Plan schedule.</p>
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Phase 5. Project Report(s):

Who	<p>Regional Board staff – project lead scientist (A. Carpenter)</p> <p>Stakeholders: Stakeholder will review Project Report to provide technical assistance.</p>
Action Steps & Schedule	<ul style="list-style-type: none"> • March 2006-April 2006-- Prepare a Project Report with TMDL, allocations, and corrective measures necessary to attain compliance with water quality standards. This plan will include an implementation and monitoring plan. • May 2006--Send to Stakeholders for technical advice. • June 2006-- Consider Stakeholder comments and revise report if appropriate • July 2006--Prepare other documents necessary for proposed regulatory action (e.g. resolution, CEQA documents, etc) • August 2006-November 2006--Obtain Scientific Peer Review and other reviews and prepare responses to comment.
Cost (PY & \$)	<p><u>Staff Resources:</u> FY 05-06: 0.3 PY and for FY 06-07: 0.1 PY: Staff resources to develop report</p> <p><u>Contract Resources:</u> = no RB3 contract money estimated at this time</p>
Issues	<p><u>Aptos Creek:</u></p> <p>None at this time.</p> <p><u>Valencia Creek:</u></p> <p>The final Project Report may be delayed if the County cannot meet the Monitoring Plan schedule. (See Item One above.)</p>

Phase 6. Regulatory Action(s):

Who	<p>Regional Board staff – project lead scientist (A. Carpenter)</p> <p>Stakeholders: Stakeholder will review Preliminary Project Report to provide technical assistance</p>
Action Steps &	<ul style="list-style-type: none"> • December 2006-April 2007-- Prepare documents for regulatory approval and present to Regional Board for action.

Schedule	
Cost (PY & \$)	<i>Staff Resources:</i> FY 06-07: 0.2 PY: Staff resources to develop report and respond to review comments <i>Contract Resources:</i> no RB3 contract money estimated at this time
Issues	None at this time.

Potential Future Activities (as needed)**Budget and Schedule Uncertainties:**

Budget: Short-term:

Long-term:

Schedule: